

PhD project: opportunity for a student

Recruitment in tropical cypress-pine is *Callitris intratropica* a useful indicator of savanna health?

Background The Tropical Cypress-pine *C. intratropica* is a fire-sensitive, obligate-seeding conifer endemic to tropical Australia. Its distribution has declined dramatically in the last sixty years and in many areas it is now restricted to topographic refugia whilst in others it continues to thrive on exposed sites. This decline is attributed to the impact of the high-intensity fires that have replaced Aboriginal burning practices, but factors limiting regeneration are poorly understood. Research suggests that fire, soil nutrients and rainfall alter the relative importance of competition, facilitation and herbivory on regeneration success of *C. intratropica*.

Because of its sensitivity to fire, *C. intratropica* is widely promoted as an indicator of savanna health, a claim that has not been verified. This project aims to identify the factors limiting the recruitment and distribution of *C. intratropica*. Results will have implications for management planning in national parks, particularly where there is a need to maintain viable stands of *Callitris* and/or assess the health of savannas in their management areas.

Project aim A combination of field and shadehouse experiments and field observation in Litchfield National Park will be used to identify processes limiting recruitment in *C. intratropica* including:

1. whether developmental constraints place conifers at a competitive disadvantage relative to angiosperms, restricting them to unproductive sites;
2. the role of competition by grasses on *C. intratropica* regeneration and the effect rainfall, soil nutrients and fire have on the outcome;
3. whether *C. intratropica* is dispersal-limited, and if so, what effect this has on local distribution;
4. how seed predation affects regeneration; and
5. whether adult *C. intratropica* facilitate recruitment by suppressing potential competitors.



Results will be incorporated into demographic models that include fire regimes.

Resources Some operating funds are available. Successful application is conditional on obtaining an Australian or International postgraduate study award to cover living expenses.

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